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Accidents.

Men, not machines, cause accidents. Implement record. v.36,no.6. June, 1939. p.18.

There's no place like home for accidents. By Roderick M. Grant. Popular mechanics magazine. v.72,no.2. August, 1939. p.252-254,120A-121A.

Agricultural Engineering.

Dip into agricultural engineering history. Implement and machinery review. v.65,no.771. July 1, 1939. p.300-303.

Directions for making a halter. College Station, Tex., 1937. 2p. Texas agricultural and mechanical college. Cooperative extension work in agriculture and home economics. Leaflet 15.

How to fit a crosscut hand saw. By L. M. Roehl. Electricity on the farm. v.12,no.1. January, 1939. p.15-16.

Portee des Travaux du IIIème Congres International du Genie Rural. By E. Morales y Fraile. Technique Agricole Internationale. v.19,no.1. January-March, 1939. p.13-17. Significance of the Third International Agricultural Engineering congress.

Agriculture.

Beneficiaries of farm spending. By Frank R. Walters. Magazine of Wall street. v.64,no.6. July 1, 1939. p.275-277, 311-312. Crop prospects, subsidies and agricultural purchasing power.

Gross farm income in 1938. Farm implement news. v.60,no.12. June 15, 1939. p.20. With estimates for 1937 revised upward, a reduction of 10.9 percent is shown--estimates by States.

Improving on nature's handiwork. In Report of the agricultural experiment station, University of California, July 1, 1936 to June 30, 1938. Berkeley, California, 1938. p.15-29. "References": p.29.

Air Conditioning.

Air conditioning in industry. By W. L. Fleisher and others. Heating, piping and air conditioning. v.11,no.4. April, 1939. p.255-268. Part 3--Test data and results on the physiological reactions of individual workers to high effective temperatures.

Application of summer weather data in design. By John Everetts, Jr. Heating, piping and air conditioning. v.11,no.5. May, 1939. p.319-322. Purpose of paper is to demonstrate practical application of data in air conditioning.

Check list for air conditioning drawings. By John D. Constance. Heating and ventilating. v.36,no.5. May, 1939. p.43.

Check list for air conditioning servicing. By Joseph F. Kern, Jr. Heating and ventilating. v.36,no.3. March, 1939. p.39-43.

Data on heat output of poultry result from government research. By H. G. Barott. Heating and ventilating. v.36,no.3. March, 1939. p.27-29. In order to obtain best results from domestic animals and fowls, proper air conditions are necessary. However, to maintain given air conditions knowledge of heat output of animals or fowls is necessary. Author describes how heat production of poultry is determined as well as the air conditioning plant used in connection with tests.

Low-cost cooling for residences. By C. K. Otis. Agricultural engineering. v.20,no.7. July, 1939. p.279-282. Simple method which has been in common use for years is called cooling by night air. This practice consists of opening house during night and allowing cooler night air to circulate through rooms and take out heat accumulated during day. In early morning windows are closed, shades drawn on sunny side, and cool interior preserved throughout day. Some additional comfort may be obtained by means of fan which circulates cooler basement air through house. Success of night air cooling depends upon well-insulated house of good size. It also loses its effectiveness during long-continued hot spells when walls and floors gradually get hotter.

Performance of coils for dehumidifying air. By William Goodman. Heating, piping and air conditioning. v.11,no.4. April, 1939. p.233-236.

Performance of coils for dehumidifying air. By William Goodman. Heating, piping and air conditioning. v.11,no.5. May, 1939. p.305-308.

Psychrometric chart: its application and theory. By William Goodman. Heating, piping and air conditioning. v.11,no.6. June, 1939. p.357-360. In addition to elementary uses of psychrometric chart--such as showing relationships between dry

bulb, wet bulb, and dew point temperatures, and relative humidity--it provides simple and enlightening means of analyzing many complex problems in comfort and process air conditioning, including drying. New psychrometric charts covering low, middle and high temperature ranges, with saturation curves for various barometric pressures, are presented. General theory of psychrometric chart is discussed in detail, and methods of solving problems by use of charts are described. These new charts facilitate solution of most problems and lead to clearer understanding of fundamentals.

Psychrometric chart: its application and theory. By William Goodman. Heating, piping and air conditioning. v.11,no.7. July, 1939. p.421-424.

Some fundamentals of psychrometry. By Serge J. Zaroodny. Heating, piping and air conditioning. v.11,no.5. May, 1939. p.294-295,298. Brief review of some fundamentals of psychrometry, with comparison of dewpoint and adiabatic saturation methods, and with distinction between adiabatic saturation and wet bulb temperatures.

Some legal aspects of air conditioning. By Lawrence R. Bloomenthal. Heating, piping and air conditioning. v.11,no.5. May, 1939. p.301-302. Cites pertinent court decisions and indicates some things to remember.

Alcohol Fuel.

'Alky-gas' is inferior to gasoline, according to Yale engineers' tests. National petroleum news. v.31,no.21. May 24, 1939. p.33-34. Conclusions of tests as regards performance of alcohol blends were given as follows: 1. Under level-road conditions, automobiles with rich carburetor settings may show greater economy with the blend than with gasoline at low speeds, but reverse will be true at high speeds. Cars with lean carburetor settings will show greater economy with gasoline than with blend at all speeds. 2. Under wide-open-throttle conditions, most cars will show either more power, greater fuel economy, or both, with gasoline than with blend. 3. In summer only slight decreases, but in winter appreciable decreases, in mileage and ease of engine starting and warm-up will result with use of blend instead of gasoline. Marked decreases in mileage will be obtained if blend is used in modern automobiles during sustained high-speed runs. 4. Relative performance of automobiles with gasoline and alcohol blends depends primarily on carburetor settings and characteristics. 5. In general, alcohol blends are not as satisfactory for modern automobiles as gasolines having equivalent anti-knock characteristics. Regarding anti-knock characteristics of alcohol blends, following conclusions were made: 1. In general, blending value of alcohol decreases as octane number of base gasoline increases and as lead susceptibility of gasoline decreases. 2. Alcohol and tetraethyl lead are substantially independent in their action when both are mixed with given gasoline. 3. Between 0.5 and 1 cubic centimeter of tetraethyl lead per

gallon will produce same anti-knock effect as 10 per cent of alcohol by volume. 4. Alcohol blends usually rate higher on road than by motor method.

'Alky-gas' plant seeks Santa Claus. National petroleum news. v.31,no.25. June 21, 1939. p.35-36,38.

Power alcohol in India. By N. G. Chatterji. Facts about sugar. v.34,no.4. April, 1939. p.49-50. Subject vitally related to problem of surplus molasses disposal. Schemes envisage use for motor fuel.

Production possibilities of alcohol for engine fuel. By Harry Miller. Agricultural engineering. v.20,no.7. July, 1939. p.265-266. In final analysis new fuel must cost no more per unit of work done. Alcohol must sell at price higher than present refinery price of petroleum fuel if fair price is to be paid to farmer for raw material. However, by using alcohol in small amounts added to gasoline as means of improving quality of product, much higher price can be justified.

Belts.

Belts and belt fasteners. By J. G. Dent. Implement and tractor. v.54,no.8. April 15, 1939. p.16.

How to select fabric belts. By Michael Berman. Factory management and maintenance. v.97,no.6. June, 1939. p.94-96.

Bins.

Building bins of wood and steel. By C. O. Sandstrom. Chemical and metallurgical engineering. v.46,no.3. March, 1939. p.166-169.

Boilers.

A.S.M.E. Boiler code: revisions and addenda to boiler construction code. Mechanical engineering. v.61,no.1. January, 1939. p.77-78.

Brooders, Electric.

Electric brooders. By R. U. Blasingame. Pennsylvania farmer. v.120,no.4. February 25, 1939. p.142-143.

Building Construction.

Earthquakes and structures: discussion. By Homer M. Hadley and R. McC. Beanfield. American society of civil engineers. Proceedings. v.65,no.3. March, 1939. p.565-570.

How to calculate the number of brick for kiln arches and crowns. By T. W. Garve. Brick and clay record. v.95,no.1. July, 1939. p.15-21. Formulas provide accurate deter-

minations for each number of units.

How to estimate accurately. By J. Douglas Wilson. American builder. v.61,no.7. July, 1939. p.66-67,102,104. Two types of framing are covered in this article of a series on estimating.

Modern structural systems. Architectural record. v.86,no.1. July, 1939. p.93-106. Wood, masonry, concrete, steel, combined materials.

Money savers for the home builder. Popular mechanics magazine. v.72,no.2. August, 1939. p.194-199,125A.

Simplified analysis of multiple-story frames. By A. Floris. Civil engineering. v.9,no.8. August, 1939. p.492-494.

Strength of a riveted steel rigid frame having straight flanges. By A. H. Stang, and others. Washington, U.S. Govt.print.off., 1938. p.269-313. References: p.312-313. U.S. National bureau of standards. Research paper RP1130.

Structural elements of houses. Architectural record. v.86, no.1. July, 1939. p.83-92. Foundations, floors, walls and partitions, roofs.

Structural requirements for houses. Architectural record. v.86,no.1. July, 1939. p.81-87. Durability, fire protection, increased strength plus reduced weight, minimum volume change, insulation--thermal and acoustical, fabricating economy.

Building Materials.

Aluminum alloys for engineering structures. By D. J. Bleifuss and B. J. Fletcher. Civil engineering. v.9,no.8. August, 1939. p.481-482. Discussion of properties and principal applications of alloys 27S-T and 53S-T.

Approach to the design of concrete mixes. By Charles E. Wuerpel. Civil engineering. v.9,no.8. August, 1939. p.463-466. Choice of water-cement ratio; types and properties of cement.

Relation of compositions and heats of solution of portland cement clinker. By Herbert Insley and others. Washington, U.S. Govt.print.off., 1938. p.355-365. References: p.365. U.S. National bureau of standards. Research paper RP1135.

Voids in granular materials. By W. P. Berggren. Agricultural engineering. v.20,no.6. June, 1939. p.233-234.

Canals.

Equipment for processing fill material. By C. H. Kadie. Engin-

Canals. (Cont'd).

eering news-record. v.121,no.16. October 20, 1938. p.487-489. Rolled fill contractors on the All-American Canal works develop moisture regulation at borrow pits and equipment for removing oversize stones.

Chemistry.

Chemistry in 1938. Industrial and engineering chemistry. Industrial ed. v.31,no.1. January, 1939. p.3-17.

The young chemist and the government service. By Louis Marshall. The chemist. v.16,no.2. February, 1939. p.124-134.

Chemistry, Technical.

Chemurgy comes south. By Harry E. Barnard. Manufacturers record. v.108,no.6. June, 1939. p.26-27,50. Discussion except perhaps of Cuban sugar has related to development through research of new uses for old crops. There is another chemurgic interest which is equally valuable. That is growing of new crops which have heretofore been imported from other lands but which can be grown in our own country and with our own labor. These new crops will displace no product now grown.

Chemurgy opens new vistas to prosperity for American farmer. Arizona farmer. v.18,no.5. May 13, 1939. p.15. Discusses work of regional laboratories.

Containers.

American wooden boxes and crates. By W. L. Neubrech. Washington, U.S. Govt.print.off., 1938. 35p. U.S. Bureau of foreign and domestic commerce. Trade promotion series. No.188.

Containers for fruits and vegetables. By L. C. Carey. Washington, U.S. Govt.print.off., 1939. 64p. U.S. Department of agriculture. Farmers' bulletin no.1821.

Corn.

Chemical determination of soundness in corn. By Lawrence Zeleny and D. A. Coleman. Washington, U.S. Govt.print.off., 1939. 24p. U.S. Department of agriculture. Technical bulletin no. 644. "Literature cited:" p.22-23.

Grading hybrid seed corn for planting. By R. H. Reed. Agricultural engineering. v.20,no.4. April, 1939. p.148,152. Manufacturers are developing graders; growers are experimenting with grades; and implement manufacturers are making new planter plates, and yet, commodity with which they all work is variable item none can describe. System of nomenclature is needed, and when that system is developed and put in use, many problems now facing hybrid seed corn industry will disappear.

Corrosion.

Developments in soil corrosion and pipe protection. By F. N. Speller and V. V. Kendall. American water works association. Journal. v.30,no.10. October, 1938. p.1635-1650. General conclusions: 1. All commonly employed metals corrode in certain soils and all require protection in severely corrosive soils. 2. Range of content of carton, manganese, sulphur, silicon, or copper found in commercial grades of carbon steel and iron shows no indication of having very material effect on corrosion rate of metal. 3. Copper is corroded by soils high in organic matter and by alkaline soils in which ratio of chlorides and carbonates to sulphates is high. 4. Corrosion of lead is practically negligible in soils high in sulphates and carbonates. 5. Effectiveness of zinc coatings and poor protection afforded by lead coatings on steel is primarily due to fact that zinc is anodic to steel and lead is cathodic. 6. Rate of pitting in poorly drained soils is approximately proportional to time, regardless of metal used. 7. Most important factors in soil corrosion, aside from water content, are total acidity or alkalinity, and electrical conductivity. 8. Recent investigations in Holland have shown that under certain conditions bacteria in soil are indirectly responsible for serious corrosion.

Cotton.

Cotton quality. By Francis L. Gerdes. Cotton ginners' journal. v.10,no.10. July, 1939. p.5-6,10-11,18-19. Precautions for preserving it through harvesting and ginning.

Regulations pertaining to cotton marketing quotas for the 1939-40 marketing year. Washington, U.S. Govt.print.off., 1939. 51p. U.S. Agricultural adjustment administration. Cotton 307.

Cotton Gins and Ginning.

Standards of ginning cost. By Orville Adams. Cotton and cotton oil press. v.40,no.10. March 18, 1939. p.7-8. Relation of total costs and volume costs to size and power groups.

Cottonseed.

Cottonseed processing research. By W. R. Woolrich. Mechanical engineering. v.61,no.2. February, 1939. p.131-135. Results and future program of research.

Dairy Farm Equipment.

Portable milker for dairy barn eliminates pipe line. Popular mechanics magazine. v.72,no.2. August, 1939. p.241. Pump unit, which draws milk from cow and delivers it to milking pail entirely under vacuum, weighs 175 pounds and is powered either by 110-volt alternating current or thirty-two-volt direct

Dairy Farm Equipment. (Cont'd).

current, driving a one-third horsepower motor. Ground wire to prevent shock and thermostatic circuit breaker which guards against motor damage from overheating are safety features.

Dams.

Abutment problems at Zuni Dam. By Edwin B. Eckel. Civil engineering. v.9,no.8. August, 1939. p.490-492.

Improving foundation rock for dams. By James B. Hays. Civil engineering. v.9,no.5. May, 1939. p.309-312. Brief review of grouting technique.

Jet deflectors for high-dam outlet conduits. By Harold A. Thomas and Wallis S. Hamilton. Civil engineering. v.9,no.5. May, 1939. p.297-300. High-velocity jets from outlet conduits of large dam present serious problem of erosion control. Even if jets fall on concrete apron, high velocities may persist beyond downstream limit of paving and undercut the end sill. Satisfactory solutions of such problems can be obtained only by tests on models, and here present results of extensive series of these tests, made for a number of War Department dams in West Va. and Penna. As illustration of magnitude of problem it may be noted that the conduits of Tygart Dam, one of the structures studied, may at full reservoir release upwards of 500,000 hp of potentially destructive energy.

Reconstructing the Austin Dam. By C. H. Vivian. Compressed air magazine. v.44,no.6. June, 1939. p.5895-5902.

World's largest dry-fill dam. Engineering news-record. v.122,no.25. June 22, 1939. p.846-848. Hansen Dam, under construction in Tujunga Wash in Los Angeles, will be largest dry-fill earth dam in world, containing nearly 13,000,000 cu. yd. As part of extensive flood control project for protection of Los Angeles area, it will create large detention reservoir to reduce peak discharges in Wash. Materials for fill are divided into six zones. River diversion and outlet conduits, passing through center of dam, are built as integral part of gravity spillway.

Dew Points.

Electrical method for the determination of the dew point of flue gases. By H. F. Johnstone. Urbana, Ill., 1929. 22p. University of Illinois. Engineering experiment station. Circular no.20.

Diesel Engines.

Diesels supplement hydro in periods of low stream flow. By John Donaly. Southern power and industry. v.57,no.8. August, 1939. p.40-41. When the hydro supply fails,

Diesel Engines. (Cont'd).

Diesels are started. Low load factor necessitates minimum installation cost.

Drainage.

Farm drainage with ditching dynamite. By L. F. Livingston. DuPont magazine. v.33,no.3. March, 1939. p.8-9.

Fascine drainage. By D. Reid Tweedie. The planter. v.20,no.3. March, 1939. p.121-124. Method described by illustrations.

Dryers and Drying.

Drying commercial solids. By R. C. Ernst and others. Industrial and engineering chemistry. v.30,no.10. October, 1938. p.1119-1122. Drying curves show for first time relation between air and vacuum drying of solids.

Drying machinery. By Fred Kershaw. Industrial and engineering chemistry. v.30,no.10. October, 1938. p.1115-1118.

Earth Pressure.

Lateral earth and concrete pressures: discussion. By David A. Molitor. American society of civil engineers. Proceedings. v.65,no.3. March, 1939. p.465-466.

Lateral earth and concrete pressures: discussion. By Ralph W. Stewart. American society of civil engineers. Proceedings. v.65,no.5. May, 1939. p.879.

Electric Service, Rural.

Progress in rural load building. By H. E. Dexter. Edison electric institute bulletin. v.7,no.6. June, 1939. p.298-300,336.

Steel poles: their use in rural areas and notes on installation. By John McCombe. Electrical times. v.95,no.2481. May 11, 1939. p.697-698.

Electricity in the Home.

Electric home of the future. By George H. Bucher. Popular mechanics magazine. v.72,no.2. August, 1939. p.161-165,135A.

Figuring the cost of using electricity. Consumers' digest. v.6,no.1. July, 1939. p.10-13.

Electricity on the Farm.

Electricity on the farm. By J. V. Brittain. Country life. v.85,no.2207. May 6, 1939. p.70. Some notes on costs.

Electricity on the farm. By J. V. Brittain. Country life. v.85,no.2215. July 1, 1939. p.56. Recent progress.

Fluorescence in ultra-violet light. By Julius Grant. Rural electrification and electro-farming. v.14,no.167. April-May, 1939. p.218-219,221. Purpose of article is to draw attention to novel and useful piece of equipment which owes its use in connection with farm problems entirely to advent of electricity.

What constitutes a good rural electrification extension program. By M. M. Johns. Agricultural engineering. v.20,no.7. July, 1939. p.277-278.

Engineering.

Engineering evolution. By S. P. Lyle. Agricultural engineering. v.20,no.7. July, 1939. p.259-262. Engineers possess no magic powers to create to order immediately new markets and consequent employment to take place of loss of markets and loss of employment due to unavoidable causes not related to engineering, but we do acknowledge that evolution in science and engineering together create wealth and new employment in field which recognizes no limits to its frontiers. Engineering evolution is dependable progressive factor in our agricultural as well as national economy, which is directing its force with increasing effect toward profitable efficient re-employment as well as gradually bringing to every home benefits and services which even kings could not command fifty years ago.

Progress in engineering knowledge during 1938. By P. L. Alger. General electric review. v.42,no.2. February, 1939. p.58-77.

Erosion Control.

Our soil--or our life. By P. G. Cross. Country life and the sportsman. v.75,no.1. November, 1938. p.40-42,97. Each year erosion robs our land of 63,000,000 tons of fertile soil.

Explosives.

Safe storage, handling, and use of commercial explosives. By D. Harrington. Washington, D.C., 1939. 13p. mimeographed. U.S. Bureau of mines. Information circular I.C. no.7046.

Extension.

New federal extension set-up. Extension service review. v.10,no.3. March, 1939. p.44. New organization comprises four divisions: 1. Division of business administration. 2. Division of field coordination. 3. Division of subject matter. 4. Division of extension information.

Fans.

Fan engineering. Ed. by R. D. Madison. Buffalo, N.Y., Buffalo forge company, 1938. 739p.

You pay for motor input, not fan horsepower. By H. Clay Moore, Jr. Southern power and industry. v.57,no.8. August, 1939. p.26-30. Fan selection is not subject to exact engineering analysis but it becomes nearly so if all factors are considered and given proper weight.

Farm Buildings.

Don't tear down the old red barn! Hoard's dairyman. v.84,no.6. March 25, 1939. p.177,195.

Farmhouse and farm buildings at Fair designed for electric service. American builder. v.61,no.6. June, 1939. p.78-82.

The plan's the thing--even for barns! By R. W. Loudon. American builder. v.61,no.7. July, 1939. p.68-69. No. 1 of a series of articles deals with planning, equipping and modernizing of barns.

Farm Machinery and Equipment.

Agricultural mechanization a national asset. By Harry G. Davis. Farm machinery and equipment. No.1863. March, 1939. p.7-8,24,26. Factual analysis of the value and importance of modern farm equipment.

An artificial hay drier. By Harold T. Barr. Implement record. v.36,no.6. June, 1939. p.16-17. Developed at the Louisiana State University.

Binders and combines sold in U.S. since 1919. Farm implement news. v.60,no.11. June 1, 1939. p.21.

Coming of mechanised farming. By S. J. Wright. Country life. v.85,no.2215. July 1, 1939. p.46-48.

Farm mechanization a national asset. By Harry G. Davis. Farm implement news. v.60,no.9. May 4, 1939. p.35-37. Great problem confronting American agriculture today, is that of reducing its costs of production. Millions of farmers recognize this and are increasingly using more and more machinery,

Farm Machinery and Equipment. (Cont'd).

as evidenced by fact that 1937 purchases of farm equipment were largest of record. There are, however, too many who are still using 1894 methods in corn production and in growing of other crops. These are using too much human labor and, naturally, are not getting fair return for their labor. Prices, after all, are not controlling factor of farm success. Efficiency is. Low costs of production in agriculture, just as is case in manufacturing industries, is real key to agricultural prosperity. Lower costs mean surer profits and, certainly, reduce hazard of loss when farm prices are too low, as is case at present.

Flying cultivator? By Robert Fletcher. Iowa agriculturist. v.40,no.2. May, 1939. p.6-7.

How the tractor, combine sales pies were cut last year. Implement record. v.36,no.4. April, 1939. p.18-19.
More tractors with rubber tires were manufactured in 1938 than 1937 although total number of wheel tractors built was 67,000 less. Total production of combines increased 63 per cent in value, although average value per combine decreased from $753 to $734, indicating that trend is to still more small machines. Value of threshers made increased 82 per cent, with trend to slightly smaller machines. Of every hundred tractors sold in America last year, about seven were crawlers, ten were four-wheelers. Other 83 were all-purpose machines. Decrease from 1937 in total value of tractors manufactured amounted to about 77 million dollars, representing drop of about one-third.

How to build a power buck rake. Oregon farmer. v.62,no.7. March 30, 1939. p.169.

Implements to fit your farm. By J. E. Stanford. Southern agriculturist. v.69,no.1. January, 1939. p.5,31.

Improvement of disk tools. By A. W. Clyde. Agricultural engineering. v.20,no.6. June, 1939. p.215-221.
Tests on 22-in disks. Tests on 24-in Wheatland disks. Tests on 24-in Disk plow. Tests on 18-in disks.

Industry's trade shows moderate 1938 decline. Implement and tractor. v.54,no.9. April 29, 1939. p.13-14.
Table 1--Value of farm equipment and related products manufactured and sold, by classes: 1938, 1937 and 1936. Table 2--Principal items of farm equipment and related products manufactured and sold, by number and value: 1938.

Molasses silage and equipment with which it is made. By E. A. Hunger. Farm implement news. v.60,no.12. June 15, 1939. p.18-19,38. Advantages: 1. It makes better feed. 2. Quality is uniform. 3. Fire hazard is eliminated. 4. Less storage space is needed. 5. Less labor is necessary. 6. It is easy to feed.

Farm Machinery and Equipment. (Cont'd).

7. Silage is cleaner and eliminates waste. 8. Less damage to crops. 9. Extra cuttings are possible. 10. Silage cuts costs.

New cane harvester for Hawaii. Facts about sugar. v.34,no.5. May, 1939. p.31. Harvester is designed to cut cane just below surface of ground, but high enough to avoid injury to roots. As it cuts cane, it will pick up stalks and take them into cutting compartment where they are cut into pieces about foot long. These pieces are then carried by an automatic conveyor to trucks or wagons traveling alongside.

New haying tools. Southern planter. 100th year,no.5. May, 1939. p.5. Illustrations.

New machinery developments needed in southern agriculture. By H. P. Smith. Agricultural engineering. v.20,no.6. June, 1939. p.235-236.

Report on labour-saving devices. By the Hawaiian sugar planters' association. International sugar journal. v.41,no.485. May, 1939. p.179-181. Falkner harvester. Grab harvesting. Walsh cane unloader.

Six-row Dutch mechanical hoe. By R. Gillard. British sugar beet review. v.13,no.3. June, 1939. p.79.

Some facts that the statistics show. Implement and tractor. v.54,no.14. July 8, 1939. p.26,75-76. Statistical information in this issue has been compiled and published that industry may have clearer perspective of its future projected upon factual background of its past.

Specifications of combined harvester-threshers. Farm implement news. v.60,no.11. June 1, 1939. p.22-23.

Steel mules. By C. Horace Hamilton. Land policy review. v.2,no.2. March-April, 1939. p.1-7. We are in a position where it seems we cannot continue mechanization without great social cost, nor can we stop it without great social cost. Our only hope lies in development of social institutions that will control machine and that will give us, at same time, set of human values just as satisfying as those enjoyed under more simple agrarian organization.

Farmhouses.

How to build split-log summer cottages or year 'round farm homesteads. By S. A. Witzel. American builder. v.61,no.7. July, 1939. p.70-71,90. Attractive rustic buildings can be inexpensively erected on farm or cottage sites from second growth or small size timber using this split log system.

Farmhouses. (Cont'd).

Hundreds of farm homes being built in South at extremely low cost. American lumberman. No.3149. April 8, 1939. p.58-59.

Vivienda rural tipo medio. By J. A. Rodriguez. Asociación rural del Uruguay. Revista mensual. v.66,no.4. April, 1939. p.32-36. Intermediate type of rural dwelling.

Feeding and Feeding Stuffs.

Mechanical curing and processing of feeds. In Report on the agricultural experiment stations, 1938. By J. T. Jardine and F. D. Fromme. Washington, U.S. Govt.print.off., 1939. p.137-138.

Fences, Electric.

Factors to consider in electric fencing. Implement and tractor. v.54,no.9. April 29, 1939. p.20,27. Principal advantage of electric fence is low cost of erection. Principal disadvantage to date has been in mishandling of current. Considerable loss of livestock has followed improper installations and there are instances of persons being electrocuted.

Fertilizer Placement.

Fertilizer placement machines. Pacific rural press. v.137, no.9. March 4, 1939. p.206. Illustrations.

Fertilizers.

Complete composition of commercial mixed fertilizers. By Frank O. Lundstrom and Arnon L. Mehring. Industrial and engineering chemistry. Industrial ed. v.31,no.3. March, 1939. p.354-361. Forty-four representative samples of commercial mixed fertilizers were collected from manufacturers and state control officials in sixteen states in 1935. Ordinary complete mixtures were represented by twenty-seven samples with average nitrogen, phosphoric acid, and potash contents same as those of all commercial fertilizers consumed in recent years. Double-strength and concentrated fertilizer mixtures were also included in study. Chemical determinations were made for all constituents ordinarily occurring in commercial fertilizers in more than traces and also for those trace elements that have proved to be of value in plant or animal nutrition. Nearly all fertilizers, including concentrated grades, contain all of secondary plant food elements as well as nitrogen, phosphorus, and potassium. Double-strength mixtures contain about same quantities of various constituents found in ordinary grades except acid-insoluble matter. This indicates that chief difference is in amount of filler added. Concentrated mixtures contain less of most of constituents other than those supplying nitrogen, phosphoric acid, and potash.

Handling liquid manure. By W. D. Pine. Hoard's dairyman. v.84,no.5. March 10, 1939. p.140,162.

Fire Protection.

Report of committee on farm fire protection. National fire protection association. Quarterly. v.33,no.1. July, 1939. p.150-166.

Rural fire fighting. By Paul O. Johnson. National fire protection association. Quarterly. v.33,no.1. July, 1939. p.166-171.

Fireplaces.

It's fun to cook outdoors. Brick and clay record. v.95,no.1. July, 1939. p.33-36.

Some like 'em hot! American home. v.21,no.6. May, 1939. p.23-24,76.

Flax.

Yuma valley joins flax parade. By Robert L. Matlock. Arizona farmer. v.18,no.5. May 13, 1939. p.3,24.
Variety, date and method of planting, effect on soil, yields to be expected.

Floods and Flood Control.

Approach to the study of flood peak formation. By F. E. Hardisty and H. B. Ingersoll. Agricultural engineering. v.20,no.6. June, 1939. p.225-226. Although the possibilities of this method of flood analysis have yet to be fully explored, its practical uses at this time appear to be as follows: 1. To rationalize and clarify synchronization phenomenon at any problem point on any stream. 2. To guide control reservoir location by mathematically considering synchronization as well as maximum flood discharges. 3. To improve flood control reservoir operation by accurately anticipating crest sequences. 4. To facilitate more accurate prediction of flood crest times at danger points. 5. To determine, in conservation operations, which tributaries contribute most to flood peaks at problem points so that remedial efforts can be concentrated on them. 6. To choose, by study of synchronization charts, where retardation or acceleration of tributary discharges it applicable in order to affect beneficially flood peaks at problem point. 7. To reduce study of flood peak formation to comparatively simple tabular operation. 8. To facilitate quick analysis of expected cresting from flood producing rains of any pattern.

Control surveys for flood protection projects in the Pittsburgh district. By Thomas J. Mitchell. Civil engineering. v.9, no.5. May, 1939. p.277-280. Surveying methods adopted were dictated by need for speed, accuracy, and economy, and included number of novel features that should prove of value in similar work elsewhere. Of particular interest is use made of state coordinate systems.

Floods and Flood Control. (Cont'd).

Mississippi River cutoffs effective. Engineering news-record. v.123,no.5. August 3, 1939. p.138-142. This year's high water showed that flood stages have been lowered as much as 15 ft. by cutoffs and associated channel improvement work inaugurated six years ago. Following shortening of river by 136 mi., full development of cutoffs has restored original slope of river. Statement explains use of sand training dikes and corrective dredging to convert disorderly reaches of river into channels efficient in hydraulic and navigation service.

Floors.

Factory floors in the chemical and related industries. By Reuel C. Stratton and Warren A. Hough. Industrial and engineering chemistry. Industrial ed. v.31,no.3. March, 1939. p.283-289.

How to estimate accurately. By J. Douglas Wilson. American builder. v.61,no.6. June, 1939. p.86,88,110,112. Estimating the floor unit of house framing is discussed.

Flow Meters.

A magnetic flowmeter. By W. M. Lansford. Mechanical engineering. v.61,no.1. January, 1939. p.20-21. Magnetic flowmeter described in paper is, new instrument although utilizing old principles, for determining rate of flow of fluids in pipe.

Measuring and regulating irrigation water. By T. F. Wentz. Utah farmer. v.58,no.17. April 25, 1939. p.3. Device for turnout, regulating and measuring water in one structure has proven completely successful in many phases of distribution. This is Calco metergate which is calibrated turnout gate of standard design and two still-wells, one connected to canal or other source and other to discharge pipe. Difference in water levels in two wells is difference in head.

Simplified pitot-tube traverse. By T. K. Sherwood and G. T. Skaperdas. Mechanical engineering. v.61,no.1. January, 1939. p.22-23. Pitot tube is probably used more generally than any other instrument for measuring fluid-flow rates in pipes and ducts, particularly in those of large size.

Flow of Air.

Flow of air and its distribution through ducts. By J. R. Zwickl. Heating and ventilating. v.36,no.3. March, 1939. p.49-52. Part 2--Flow with friction--ducts with equal friction.

Flow of air and its distribution through ducts. By J. R. Zwickl. Heating and ventilating. v.36,no.5. May, 1939. p.48-50. Part 4--Duct layout.

Flow of Air. (Cont'd).

Flow of air and its distribution thrcugh ducts. By J. R. Zwickl. Heating and ventilating. v.36,no.6. June, 1939. p.44-45. Part 5--Solution of duct layout problem.

Flow of air and its distribution through ducts. By J. R. Zwickl. Heating and ventilating. v.36,no.7. July, 1939. p.64-66. Part 6--Fan laws and fan selection.

Theory covering the transfer of vapor through materials. By Frank B. Rowley. Heating, piping and air conditioning. v.11,no.7. July, 1939. p.452-456. All of laws governing flow of vapor through materials have not been demonstrated by experiments, but data available indicate that in many cases flow of vapor through material or combination of materials is proportional to vapor pressure drop along path of flow. From nature of certain materials and from fact that vapor may be condensed either by lowering temperature or by hygroscopic property of many materials, it is evident that there will be many different conditions under which flow of vapor may not follow any simple law.

Flow of Water and Gases.

Fluid flow research. By S. R. Beitler. Engineering experiment station news. Ohio State University. v.11,no.3. June, 1939. p.9-11.

New method of presenting data on fluid flow in pipes. By A. A. Kalinske. Civil engineering. v.9,no.5. May, 1939. p.313-314.

Frost Protection.

Grower uses infra-red ray lamps for frost protection. California citrograph. v.24,no.5. March, 1939. p.159,179.

Fuels.

Combustion of wood-waste fuels. By Henry Kreisinger. Southern power journal. v.57,no.5. May, 1939. p.39-44. Table 1--Analysis of wood-waste fuels.

Garden Walks.

Garden walks and how to make them. By H. D. Eberlein and C. Van Dyke Hubbard. American home. v.21,no.6. May, 1939. p.29-31,93-95.

Gates, Roller.

New design cuts cost of roller gates. By C. R. Martin. Engineering news-record. v.122,no.21. May 25, 1939. p.66-67. New roller gate designs are described which give reduction in

Gates, Roller. (Cont'd).

chain pull, in weight of gate and in volume of gate pier due to design of roller with apron at top. Graphs of resultant forces for new and old designs are given as is list of roller gate installations in United States.

Glass Fiber.

Strength of glass fiber. By F. O. Anderegg. Industrial and engineering chemistry. Industrial ed. v.31,no.3. March, 1939. p.290-298.

Handicraft.

Partial list of references on handicraft. By B. V. Morrison. Washington, D.C., 1939. 12p. mimeographed. U.S. Department of agriculture. Extension service. Miscellaneous extension publication no.25.

Hay Handling.

Stack storage unit for hay. By W. T. Ackerman. Durham, N.H., 1938. 6p. University of New Hampshire. Extension service. Circular no.218.

What does the hay stack weigh? Oregon farmer. v.61,no.25. December 8, 1938. p.15. Rules are given for accurate measure.

Heat Transmission.

Effect of heat storage and variation in outdoor temperature and solar intensity on heat transfer through walls. By J. S. Alford and others. Heating, piping and air conditioning. v.11, no.7. July, 1939. p.461-472. Paper presents practical method for calculating heat flow into interior space as function of thermal properties of wall, surface coefficients and variable quantities of outdoor temperature and solar intensity when wall structure is homogeneous. Paper gives no new experimental data, accuracy of method may be demonstrated by using data of Houghten et al where tests include not only measured rates of heat flow but also records of outdoor air temperature and pyrheliometer measurements of solar intensity.

Flow of heat through roofs. By Aldert Molenaar and R. L. Perry. Agricultural engineering. v.20,no.6. June, 1939. p.222-224.

Heating.

Bureau of Standards issues standards for mechanical draft oil burners. Heating and ventilating. v.36,no.3. March, 1939. p.47-48,76. Standard covers: (a) Manufacturing

Heating. (Cont'd).

and production tests; (b) Laboratory requirements and test procedure; (c) Installation requirements and performance tests; (d) Oil Burner Certificate placed with each burner installation.

Gas heater installed in wall eliminates furnace room. Popular mechanics magazine. v.72,no.2. August, 1939. p.220-221. Heater fits between studding and is plastered in so that only four-stage manual control regulating heat volume and two louver-type grilles are visible. Cold air is drawn from floor through lower grille and mixes with fresh air from outside; heated as it passes around radiator, it emerges into the room through upper grille. Two rooms can be heated by single unit installed in dividing wall with grilles opening on each side. Rock wool and metal sheeting insulate walls from heater. Vent to roof from baffle-plated fire-box carries gas fumes outside.

Methods of establishing k values. By Kalman Steiner and Sydney D. Black. Heating, piping and air conditioning. v.11,no.5. May, 1939. p.290-291. How heat conductivities have been determined.

Small stokers. By Paul A. Mulcey and Ralph A. Sherman. Heating, piping and air conditioning. v.11,no.5. May, 1939. p.313-318. Part 1. Domestic anthracite burners.

Small stokers. By Paul A. Mulcey and Ralph A. Sherman. Heating, piping and air conditioning. v.11,no.6. June, 1939. p.399-404. Part 2. Small stokers for bituminous coal.

USHA gives suggestions for design of heating systems. Heating, piping and air conditioning. v.11,no.7. July, 1939. p.432-434. Covers recommendations and suggestions for designing heating system.

United States Housing Authority releases information on heating. Heating, piping and air conditioning. v.11,no.6. June, 1939. p.361-364.

Housing.

Legal problems in the housing field. Part 1. Private housing legal problems by Horace Russell. Part 2. Legal aspects of public housing. By L. H. Keyserling. Washington, U.S. Govt. print.off., 1939. Housing monograph series no.2. Technical monograph on one phase of housing prepared for the Industrial committee of the National resources committee.

Hydraulics.

Notes on the hydraulic jump. By Fred C. Scoby. Civil engineering. v.9,no.8. August, 1939. p.467-469. Its uses and characteristic occurrences; reasons for its failure to occur where expected.

Hydrology.

Watershed and hydrologic studies on the blacklands experimental watershed. By Ralph W. Baird. Agricultural engineering. v.20,no.7. July, 1939. p.273-276. To date only preliminary data have been obtained, but with most installations now in operation and with better facilities for other work being available, it is expected that some data will soon be available on surface runoff and soil losses from watersheds of different sizes and other characteristics; soil moisture conditions on selected areas; infiltration rates under different soil and cover conditions; and ground water conditions in various parts of the area.

Income.

Family income and expenditures, Pacific region. Part 1. Family income. By Day Monroe and others. Washington, U.S. Govt. print.off., 1939. 380p. U. S. Department of agriculture. Miscellaneous publication no.339.

Instruments, Electric.

Electrical instruments--selection and use--II. By R. C. Hitchcock. Electric journal. v.36,no.2. February, 1939. p.61-66.

Irrigation.

Artificial rain for sugar beet. By Roy Gillard. British sugar beet review. v.13,no.4. July, 1939. p.111-112. Conclusions: 1. Spray irrigation will undoubtedly be limited to light lands with easily drained subsoils. 2. It is very important that water should be supplied to meet optimum growth requirements of plant, as excess can be just as detrimental to plant growth as an insufficient supply. 3. In order to conserve soil moisture hoe should follow irrigation as soon as possible. 4. Besides being source of water, spray irrigation should be regarded as nutrient, containing nitrates in available form for plant growth. 5. Full advantage can be made of early nitrogenous top dressing after crop has been singled. 6. Overhead pressure system is quite independent of situation and levels of site.

Erosion under irrigation. By W. E. Code. Western farm life. v.41,no.10. May 15, 1939. p.5,14.

Fundamentals of irrigation practice. By George D. Clyde. New agriculture. v.21,no.10. July, 1939. p.11.

Gypsum in irrigation water to prevent and control alkali. By W. T. McGeorge. Arizona farmer. v.18,no.8. June 24, 1939. p.4. Use of gypsum as means of controlling or preventing accumulation of alkali requires much milder form of treatment and is far less costly. This is embodied in program suggesting its application in irrigation water. It can be con-

Irrigation. (Cont'd).

servatively stated that every ranch in Southwest which does not have supply of natural hard water should keep small amount of gypsum continuously in ditches. It will insure soil against structural deterioration or alkali accumulation and will do it effectively and economically.

Huge South African irrigation scheme. Indian engineering. v.105,no.4. April, 1939. p.139. Discussion of the Vaal-Hartz irrigation project.

It paid last year to irrigate often. Through the leaves. v.27,no.4. July, 1939. p.116-119. Table shows how yields of beets per acre increased with frequency of irrigation.

Supplementary irrigation on the Atlantic coast. By F. E. Staebner. Agricultural engineering. v.20,no.7. July, 1939. p.271-272,276.

Overhead irrigation. By E. Skillman. Journal of the Ministry of agriculture. v.46,no.2. May, 1939. p.171-175. Any irrigation system is attended by disadvantages of high cost, of possible change in soil texture, and of rapid decomposition of organic manures; but against these may be set advantages of certain independence in matter of weather, ability to plan crop production and labour distribution in confidence, and improvement in quality of produce.

Permanent cover in irrigated orchards. By Charles B. Ahlson and George Hutchinson. Soil conservation. v.4,no.8. February, 1939. p.199-202. Series of observations, made in various fruit-producing areas throughout California, are not intended to answer all questions but are submitted as indication that there is need for more research along this line.

Supplementary irrigation in the central states. By Virgil Overholt. Agricultural engineering. v.20,no.6. June, 1939. p.237-252.

Irrigation Canals.

Canal lined with cotton fabric. Engineering news-record. v.122,no.25. June 22, 1939. p.852-853. Utilizing cotton fabric as reinforcing agent for gravel-asphalt mat, experimental mile of leaking irrigation canal in Idaho was lined successfully. Article gives experiences gained in construction procedure which is new.

Graphic solution of channel dimensions by the Manning formula. By H. G. Jepson. Soil conservation. v.4,no.7. January, 1939. p.161-165.

Some experiments on seepage losses in irrigation channels. By N. Gapal and K. R. Sharma. In Minutes of proceedings of the

Irrigation Canals. (Cont'd).

Punjab engineering congress, Lahore, 1938. Lahore, Mufid-I-'Am press, 1939. p.9-35J.

Kitchens.

Kitchen storage space. By C. E. Jonas. Ithaca, N.Y., 1938. 59p. New York state college of home economics, Cornell university. Bulletin no.398.

Planning the efficient kitchen. By Esther Pond. Pullman, Wash., 1939. 26p. State college of Washington. Extension bulletin no.247.

Lighting.

Farm lighting. Illuminating engineering society. Transactions. v.33,no.10. December, 1938. p.937.

Lighting requirements in the average American home of 1938. By Mariquita Dygert. Illuminating engineering society. Transactions. v.33,no.9. November, 1938. p.839-858. Paper deals with discussion of some of factors which have contributed to gradual growth in home lighting. By contrast is shown what requirements the homemaker considered adequate in average home of fifteen years ago, as against what requirements homemaker considers adequate for good lighting of present day. Followed by short discussion of good present-day equipment and few of their applications in an average home.

Lubrication.

Improvements in Diesel-engine lubricating oils. By Ulric B. Bray and others. S.A.E. journal. v.44,no.1. January, 1939. p.35-42. Section 1. Most striking improvements in lubricating oils for automotive-type Diesel engines have been obtained through the use of soap-type additives, the authors contend, and several brands of this compounded oil are now available to Diesel engine operators. Paper deals particularly with this type of addition agent and reviews improvements obtained through its use.

Meters.

Some indicating and recording instruments indispensable in refrigeration. By C. H. Herter. Ice and refrigeration. v.95,no.5. November, 1938. p.326-328.

Milk, Effect of Heat.

Effect of heat on milk with especial reference to the cooked flavor. By I. A. Gould, Jr. and H. H. Sommer. East Lansing, Mich., 1939. 48p. Michigan state college. Technical bulletin no.164.

Miscellaneous.

Father of invention. By Thomas Spooner. Electric journal. v.36,no.3. March, 1939. p.92-94.

Job of the Federal Works Agency. By John M. Carmody. Engineering news-record. v.123,no.5. August 3, 1939. p.146-147. Describes work to be done by each of five subdivisions, reveals plans to provide construction industry with information on works programs that will aid scheduling of work and employment and promises minimum change in personnel and policies of existing organizations that are being welded into Federal Works Agency.

Machine tools--their effect on employment. By John Younger. Engineering experiment station news, Ohio State university. v.11,no.1. February, 1939. p.14-17. Tentative statement of the fact-finding committee of the American society of tool engineers.

Machinery and the American standard of living. Chicago, Machinery and Allied products institute, 1939. 87p. Illustrated factual story of the contributions of technology to American civilization.

Machines as ministers to man. By Henry Ford. In Engineering experiment station news, Ohio state university. v.11,no.2. April, 1939. p.2-4.

Motion Studies.

Study of hand motions used in small assembly work. By R. M. Barnes and M. E. Mundel. Iowa City, Ia., 1939. 65p. University of Iowa studies. Studies in engineering. Bulletin no.16.

Motor Fuel.

Ersatz motor fuels. By Gustav Egloff. Scientific American. v.161,no.1. July, 1939. p.5-7. Europe's desperate nationalisms force use of native fuels...to conserve gasoline for possible war. Result: Enormous net monetary losses.

Get motor fuel performance data from inertia-loaded engines. By Herschel G. Smith. National petroleum news. v.31,no.20. May 17, 1939. p.R-207-R-208. Laboratory method for indicating road performance of motor fuels has been developed employing inertia loading as afforded by a flywheel. Flywheel provides a time interval of about 90 seconds in loading within range of speeds of interest during which observations can be made of knocking characteristics of fuel.

Grain dust foreseen as auto fuel. Popular mechanics magazine. v.72,no.2. August, 1939. p.230. Grain dust and other farm products will be burned as fuel in internal combustion

Motor Fuel. (Cont'd).

stationary and automobile engines of not distant future, predicts Dr. David J. Price. First Diesel engine burned coal dust, and other solid fuels have proved successful experimentally in Diesel-type engines. One of difficult problems has been scavenging combustion chamber--ridding it of ash left from combustion. Confident that within a year or two there will be engines operated by explosive power of dust from grain, starch, flour and other products of farm.

High speed diesel fuel problems less acute. By M. G. Van Voorhis. National petroleum news. v.31,no.16. April 19, 1939. p.R-156-R-160. Great progress in solving diesel fuel problems, most acute in the high speed diesel engine, has been made. While the consumer does not immediately benefit from these advances, some problems, such as fuel cleanliness, have been handed on to the marketing departments so that solution becomes a matter of education. Consumer acceptance of better fuels would lessen complaints. Satisfactory or economic use of cracked fuels is in the future but there is said to be still more than enough straight-run fuel for present demand even when, to simplify distribution, it is sold for both No. 2 heating oil and diesel fuel. Narrower fuel classification and spread of viscosity has somewhat simplified refiners' problems but diesel engine manufacturers are warned that if prices are kept low, extra processing must be minimized.

Tetraethyllead susceptibilities of gasoline. By L. M. Henderson and others. Industrial and engineering chemistry. Industrial ed. v.31,no.1. January, 1939. p.27-30. Experimental evidence presented shows that, when gasolines are treated with sodium plumbite and sulfur, they require more tetraethyllead to produce given octane value than do those treated with sodium hydroxide alone and, similarly, more than do those which are thoroughly scrubbed with caustic and subsequently treated with sodium plumbite and sulfur. Differences in quantity of tetraethyllead required are related qualitatively to amount of mercaptan sulfur removed by caustic washing. Decreased requirements of tetraethyllead accomplished by efficient scrubbing of gasoline with sodium hydroxide solutions would result in large economic savings.

Tractor fuel trend is toward gasoline. National petroleum news. v.31,no.24. June 14, 1939. p.30-32. Surveys indicate that farmers, especially in Middle West, are turning more and more to regular grade gasoline as fuel for their tractors. Results of these tractor fuel surveys, which also covers types of lubricants used, are given.